

**ABSTRACT OF THE DISCLOSURE**

A method of generating a check matrix for a LDPC code includes determining a code length and a coding rate, and a basic matrix; selecting a maximum value of the weight of the column; searching an ensemble of the weights of the row and the column weights; deleting the rows sequentially from a bottom of the basic matrix; searching an ensemble of the weights of the row and the column using the set of the weights of the row as a fixed parameter, to determine an optimum set of the weights of the column; searching an optimal ensemble of the weights of the row and the column using the set of the weights of the row and the column as a fixed parameter; and dividing at random the weights of the row and the column of the basic matrix after deleting the rows in a predetermined procedure based on a final ensemble.